



Moving Innovation Forward

Case Studies: 10 Sustainable and Inclusive
Business Models



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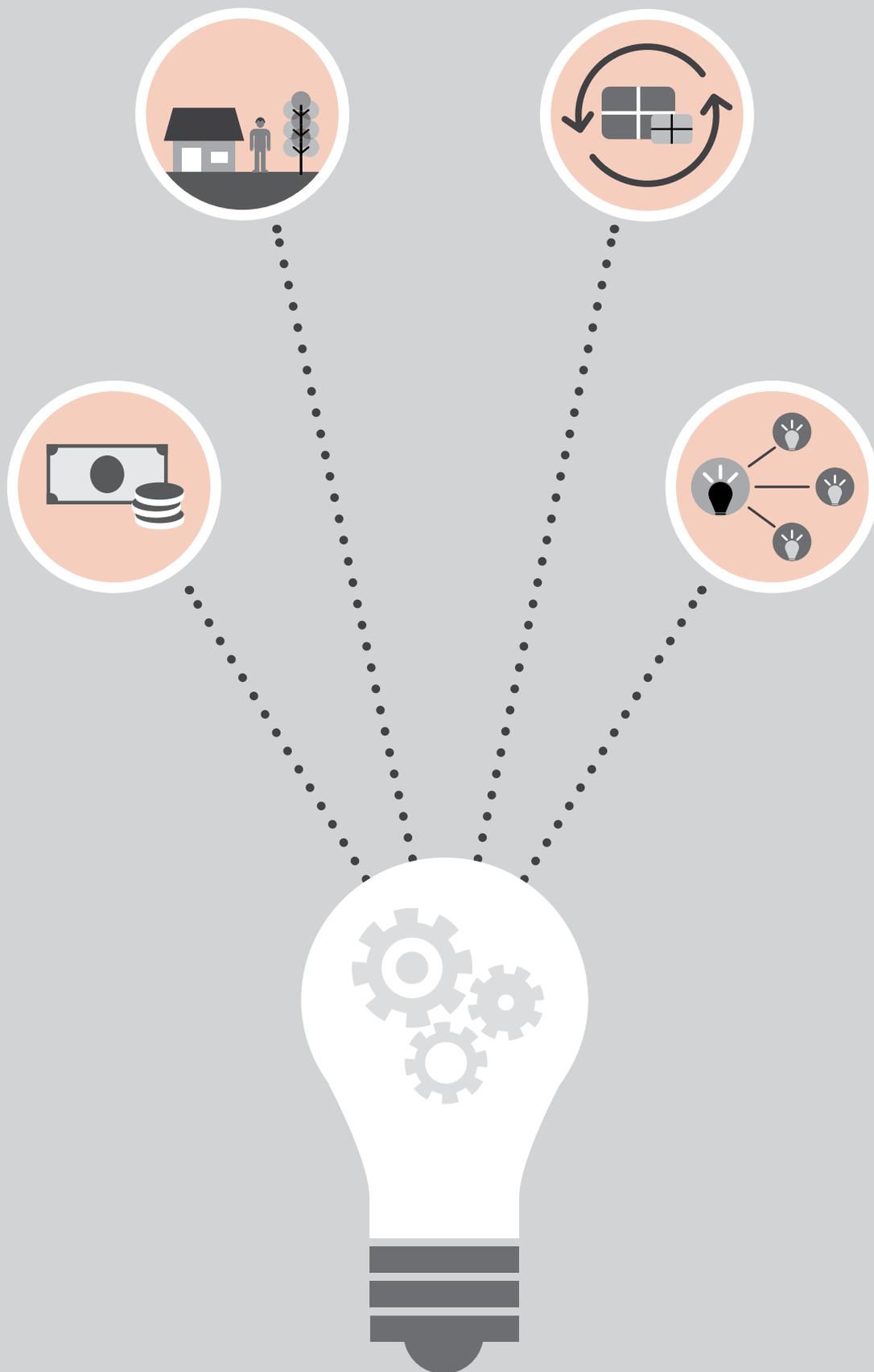
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Introduction

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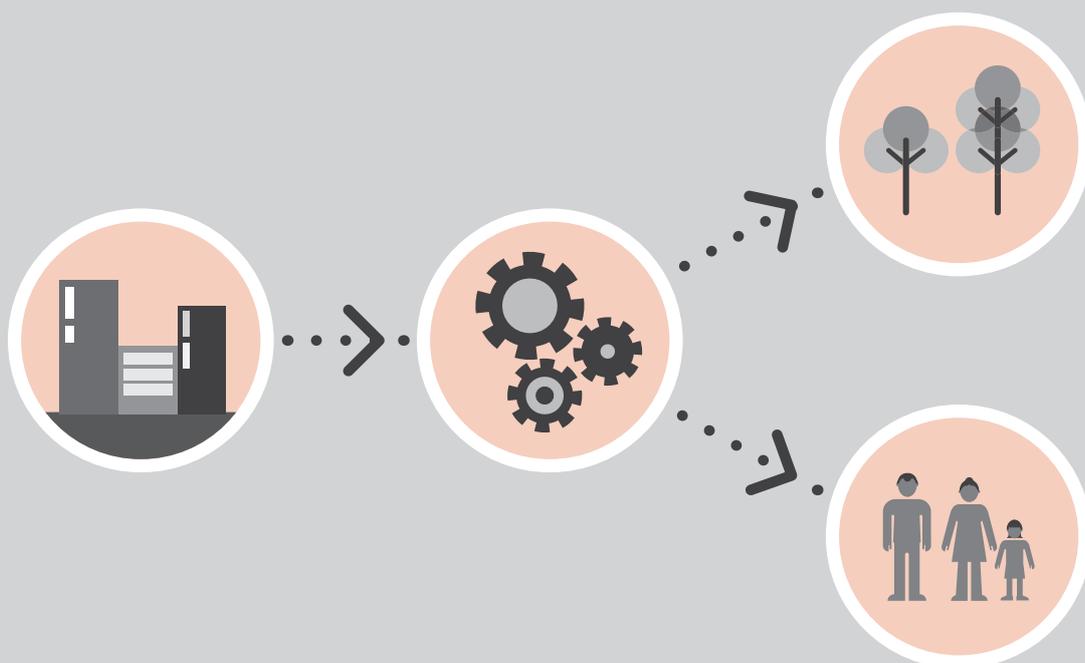
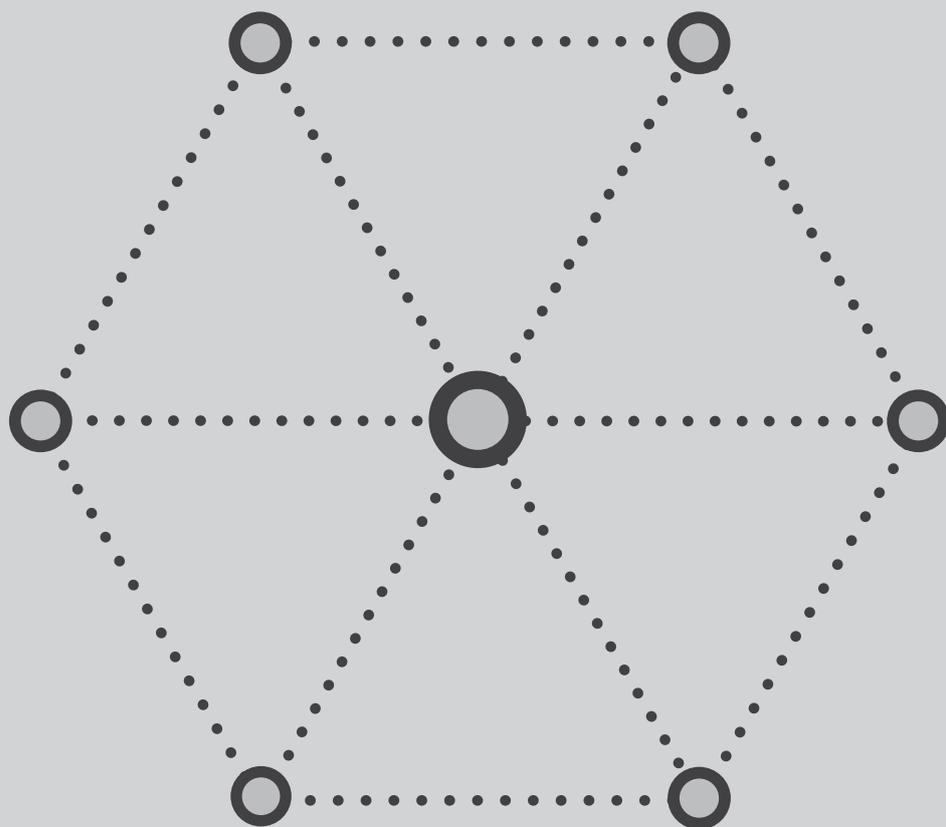
Lower income groups often lack access to innovative products and services due to structural deficiencies such as lack of infrastructure, lack of education and lack of business opportunities. Innovation is regarded as one of the key drivers of inclusive growth and development. Innovations not only have the potential to radically change the industry landscape and make India more competitive in the global market, but also can contribute to improvements in the physical and social infrastructure. Hence, innovations have the ability to improve the lives of the poor while fostering inclusive growth and sustainability.

Nowadays, globalization and new technologies including internet and mobile platforms create new opportunities for enterprises to bring goods and services to the bottom of the pyramid, which were previously not accessible for them. The emergence of new types of enterprises such as social enterprises, new-age enterprises, community-based enterprises and hybrid organisations has increased the confidence in the sector by a growing number of success stories and thereby improved availability of financial funds for these enterprises.

Recognizing the importance of inclusive innovation, GIZ has partnered with CII-CESD under the MSME Umbrella Programme to improve capacities of key actors in the innovation system that seek to foster the innovative capacities of MSME and strengthen the innovation systems around them. Central goal of the activities was to support companies in bringing about sustainability and inclusive oriented innovations.

The following case studies comprise illustrations of already practiced models and strategies of high impact innovations around the world with particular respect to India. The shown examples of innovative businesses were selected based on four criteria reflecting their innovative character. Firstly, innovations need to fulfil a value for the life of people which exceeds the mere use of the product. Secondly, it requires good quality products or service for an affordable price even for lower income groups. Thirdly, resources need to be used in an efficient manner and lastly, innovations need to be scalable and easy to replicate in different local conditions.

The innovations presented in the case studies have the potential to change life conditions for the bottom of the pyramid and might as well qualify as reverse innovations. This term is generally used for innovations that are designed for developing countries serving a broad utility and therefore, might expand as well to developed countries. Preceding the case studies the SI2 Framework is explained in more detail. Objective of the framework is to encourage re-thinking of entire production processes and business models in order to ensure sustainable innovation that have social and environmental benefits.





SI2 Framework

2

A dynamic innovation ecosystem is essential for public and private organisations to generate new technological and market knowledge. A dynamic innovation ecosystem in general is characterized by a continual realignment of synergistic relationships of institutions, corporates, incubators, entrepreneurs and researchers that promote harmonious growth of the system in active responsiveness to changing internal and external forces. Policies and incentive systems within an economic system can foster innovation processes. However, key challenges in creating a sustainable and inclusive innovation ecosystem lie in particular in gaps in the physical infrastructure. In addition, bridging gaps for seed funding is inevitable in order to foster sustainable and inclusive business solutions.

Besides structural macro-economic challenges, many businesses lack capabilities to scale up their operations and to adapt responsible business practices in their pursuit of sustainable economic development. In order to set the context and provide a more structured approach on how businesses can rethink their innovation strategies and capabilities to address sustainability challenges, CII-ITC Centre of Excellence for Sustainable Development with the support of GIZ has coined the term “Sustainable & Inclusive Innovation or SI2”. Besides providing a framework for businesses, SI2 is also the basis for interacting with the Government in order to create an enabling innovation ecosystem that is both sustainable and inclusive.

Within the SI2 framework, six areas of strategic interventions have been identified that an enterprise can employ to make their processes more sustainable and inclusive. These areas will be explained in detail in the following paragraphs. They are illustrated by on-site examples to provide a better understanding on their use. Namely these areas are a) high asset use, b) process re-engineering, c) technology empowerment, d) price modelling, e) micro-distribution and f) beyond job-to-be-done.

- a) **High asset use** implies an increase in the typical use rates of key assets ranging from physical to human resources in order to raise efficiency. It can be achieved by introducing standardized procedures. Generally, this leads to uniform output quality, sufficiency to scale and huge cost reductions. As an example, LifeSpring Hospitals is a healthcare provider specialized on maternal health and childbirth in India. By specializing on this particular niche, it can employ specialized staff and equipment, increase patient volume and reduce staff attrition rates. A second example is the NGO Gyan Shala, which serves as a primary education provider in slum areas. Gyan Shala uses radically standardized curricula and lesson plans. It mainly employs locally recruited junior teachers. Due to local recruitment, acceptance within the slums for attending education services is higher and it creates employment opportunities for junior teachers. Junior teachers receive a two-week crash-course on teaching methodology by senior teachers. A regular staff feedback for junior teachers ensures quality, whereas the local proximity increases female enrolment rates.
- b) **Process re-engineering** implicates analyzing and rethinking business workflows in order to reduce operational cost and enhance customer service. Furthermore, it comprises the breaking of a process into smaller sub-parts, increasing efficiency and reducing costs by using specialists for each of the



sub-parts. For instance, NH Cardiac Care Centres uses a vertical approach towards specialization by employing highly trained and dedicated doctors. This super-specialization aspect also entails time-saving elements, for instance assigning nurses with certain operations instead of doctors doing them. Furthermore, NH Cardiac Care Centres cooperates with partners to reach out to remote areas and fosters the telemedicine sector through post offices and mobile healthcare projects.

- c Technology empowerment** generally means that technology is put in the hands of the individual user. Nowadays, technologies have the ability to establish bridges in order to overcome the gaps between urban and rural areas. However, accessibility problems still remain in rural areas. In particular, three problems impede access to technology. Firstly, there is no or erratic electrical supply. Secondly, skilled workforce is not available and thirdly, there might simply be a lack of technology, equipment or connectivity as such. However, technology has the potential to be a game changer increasing efficiency and income, if it is affordable. The software provider ReMeDi serves as an example on how individual lives of people can be improved by making technology affordable and accessible. ReMeDi integrates audio-video conferencing software and establishes patient record centers making all health-related issues of patient quickly available to doctors. It uses partner agencies to set up large networks and to reach out to remote areas.
- d Price modelling** involves the development of an innovative price scheme which benefits the bottom of the pyramid. It is often executed in a way that breaks price units into smaller affordable units to make products and services affordable. Yeshaswini is a demonstration of successful price modelling. The micro health insurance programme is the largest self-funded health care insurance scheme. This is particularly remarkable as Yeshaswini succeeded to overcome the typical constraints associated with health insurance schemes for the poor such as low levels of coverage and benefits. Cooperatives are used here as platforms for access, distribution, customer education and collection of premiums. Similarly, the water provider Aakash Ganga uses a unique price modelling. It installed a rainwater harvesting system in six drought-prone villages in Rajasthan, one of the driest states of India. Thereby, Aakash Ganga rents rooftops of households and pipes the rainwater into an underground storage. Most of the water is sold back to the households, while the rest is used for horticulture. The simple and self-sustaining concept improves the access to clean drinking water and increases affordability since households can use revenues from rooftop rents. Additionally, the improved access to drinking water has freed time of girls and women to attend school.
- e Micro-distribution** aims at engaging community people in the distribution channel to increase credibility and accessibility. This also eases the distribution process since it makes use of existing micro-enterprises and established consumer bases. In this regard, micro-distribution does not only comprise the delivery of products and services but also the provision of business opportunities. For instance, Vision Spring is a reading spectacles provider which recruits community members as 'vision entrepreneurs' in conducting basic screenings and do door-to-door selling of spectacles. Vision Spring provides them with an initial inventory of glasses, eye-screening material, marketing resources, accounting and sales forms and conducts trainings. By doing so community members are able to become owners of their own micro-business. Hindustan Unilever constitutes another example with its Shakti Initiative. By using partnerships with government-supported and self-help groups which are financed by micro-credits, small businesses are established through women in communities to sell hygiene products. Geographic clusters for women entrepreneurs were developed and drop-off points for products reduced in order to decrease stock requirements. Moreover, the initiative involves social impact through hygiene trainings. In this regard, recruited women do not only serve as salesperson but also as providers of important social benefits.
- f The beyond job-to-be-done** aspect refers to added value to customers by provision of product or service acquisition package rather than just the product or service as such. The for-profit social enterprise Selco aims to reduce energy poverty in rural areas and to make solar lighting technology accessible to the poor. It offers high quality of products, installations, technical reliability, equipment



maintenance, customer education and linkages to financial institutions. Selco's business model relies on the establishment of supply chains for various energy services and appropriate channels for financing that meet users' personal cash flow. Moreover, it includes the recruitment and training of rural entrepreneurs and site-specific income generating activities involving energy services.

Additionally, for the development and application of innovative business ideas that promote sustainable and inclusive growth five steps have been identified in the SI2 Framework that a company should look at. In this regard, companies are strategically advised to incorporate the following aspects: (1) a vision for strategy, (2) two drivers for innovation, (3) three approaches to innovation, (4) four stages of sustainable innovation and (5) five indicators to progress.

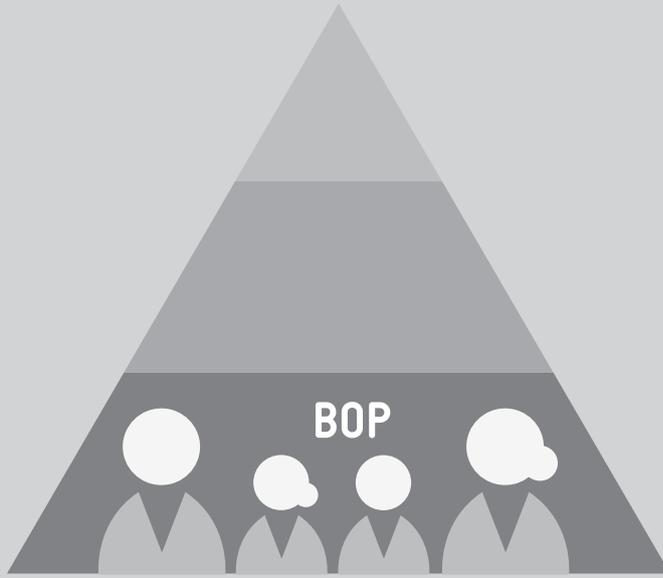
- 1 Companies need **a clear strategy vision** to recognize sustainability as a driver rather than an obstacle for innovation. Moreover, sustainability should be considered as multi-faceted including economic, social and environmental aspects. Sustainability efforts should always involve measurable targets of value-add in these aspects. Various stakeholders should be integrated to develop a comprehensive strategy. However, a vision also always requires a driving force for effective implementation. Thus, sustainable innovation needs to be driven by leadership and supported by the rest of the organization force.
- 2 The **two drivers for innovation** are poverty and natural resource depletion which are making new technological business solutions more and more important and valuable. For this reason companies that aim for sustainable innovation should contribute to the overall goal of reducing poverty and should work in a resource-efficient manner.
- 3 Companies can use **three approaches** to embrace sustainability as a driver for innovation. Firstly, the 'clean slate approach' represents an enterprise starting fresh from a sustainability need which is mostly technology-driven. In that case a company needs to examine whether it can provide the same products or services in more efficient ways. Secondly, companies that face external pressure and realize that parts of their business are not sustainable use the 'springboard approach'. For instance, IKEA needed to rethink its business approach when toxic materials were found in part of their products. Likewise, Shell and BP opened up new business branches in energy efficiency and renewable energy after heavy criticism. The third option is called 'quantum leap approach' characterizing companies with a breakthrough sustainable business idea. This approach is considered to be the most virtuous one, since companies following this approach deliver sustainable solutions for products and services without outside pressure.
- 4 Within an enterprise it is important to establish the ambition for innovation. However, each department within a company may require different types of innovation. Thus, **four stages of sustainable innovation** can be distinguished: reactive, incremental, radical and transformative. The reactive stage is the lowest and most common stage in which a company reacts to outside pressure in an ad-hoc way. A tendency among businesses prevails to resist change and adapt to ensure their existence. Therefore, these companies merely respond to new legislation, changing customer preferences, buyer demands, competitors' moves and media attention. Incremental sustainable innovations comprise alignment with community initiatives and policies. It often includes the use of ISO and other management systems that are built in the operations of the company to ensure constant improvement. In the incremental stage sustainability issues are addressed beyond compliance processes, which is essential for external credibility. Radical innovators are driven by an accelerating rate of technological change and usually aim at providing solutions for the poor. It is the vital stage in transition to a sustainable business and low-carbon economy. The last form of innovation is transformative in nature which includes anticipating of future developments. Most of these companies explore the bottom of the pyramid as new markets and set new sustainability trends, including for instance biomimetic, natural material use and its recycling.

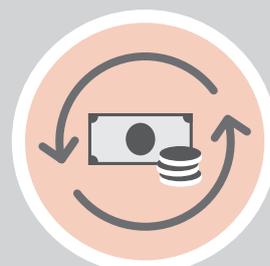
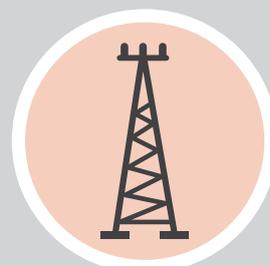
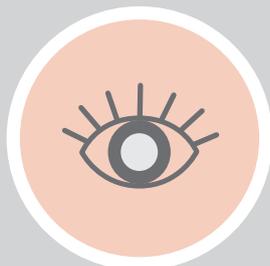


5 The **five indicators to progress** constitute long-term measures for sustainable and inclusive innovations. First of all, companies need to create a sustainability vision showing a clear direction to the future. Furthermore, leadership conviction is necessary for long-term success. Likewise, with new opportunities and challenges companies need to spend resources to stay ahead as leaders. Sustainability-based thinking should be integrated into everyday operating procedures and culture of organization. In this regard, companies need to check if their sustainability-oriented innovation strategy is paying off. Moreover, collaboration with other stakeholders is important. There needs to be a common focus on actual results. Lastly, when measuring the value-added it is important not only to look at the financial measures but also on environmental, social and corporate governance (ESG) factors since these will attract employees and build trust among employees, customers and the government.

Sustainable innovations are a crucial factor for future success of enterprises. The SI2 Framework provides guidelines and best-practices for companies to look more strategically in their business model. Thereby it assists innovative companies to integrate inclusivity and sustainability aspects.

Additionally, important conclusions were drawn while using the SI2 framework. Market-based approaches were able to generate benefits for the bottom of the pyramid. Another aspect is that sustainable and inclusive innovations functioned as a driving force by successfully adapting to socio-economic conditions. New-age enterprises show a tendency to lead to sustainable and inclusive innovations rather than conventional businesses. The argument that small enterprises cannot scale innovations for the bottom of the pyramid has been proven wrong. At last, customer value proposition exceeds adding to the product or service use, but contains a 'beyond-the-job-to-be-done' component that has the ability to make an impact in society.







Case Studies

3

3.1 Aravind Eye Care: An Innovative Hospital Network for Vision

Aravind Eye Care is a leading eye hospital dealing with critical ailment like blindness, particularly needless blindness in India. Aravind has developed an inclusive model for eye healthcare for all sections of society.

► Background

In early childhood everybody likes to play the blindfold game. However, all of us dread the part where one has to become the blindfolded person. We rely on our vision so much that even a few minutes without it makes us feel helpless and vulnerable. It is very difficult to imagine life without vision. The main cause of needless blindness is cataract; which ironically, is an easily curable disease. But if it is not cured, it can lead to partial or complete blindness.

Millions of people around the world mainly in the developing countries suffer from needless blindness. About 70% of India's population lives in rural areas. They lack access to modern health services, as education remains low. Additionally, most of the people from rural areas are poor and hence cannot afford costs of health services. Hence, people from these rural areas are vulnerable to preventable diseases including needless blindness.

► Innovative Business Model

Dr. Venkataswamy from Chennai was the visionary who started Aravind Eye Care. In spite of suffering from arthritis he became Ophthalmologist and started doing cataract operations in Madurai Medical College. He also started the concept of eye camp programs in 1960s. Based on his experience in these eye camps, Dr. Venkataswamy realized that the government alone cannot meet the health needs of all, since there are a number of challenges like inadequate infrastructure, growing population and low per capita income etc. Considering this as an opportunity, he started Aravind Eye Care, an alternative self-supporting healthcare institute that supplements the efforts of the government to overcome blindness.

As Dr. Venkataswamy says, "needless blindness can be considered as a barrier to India's productivity". He considered it a great opportunity to cater to the poor and illiterate population in India.



In 1976, the first hospital of Aravind Eye Care was built in Madurai. It had the capacity of 11 beds and used to provide care for patients with disabling cataract blindness. Currently, Aravind Eye Care has become a high volume eye care provider with a network of 5 hospitals having a total capacity of 3,400 beds. It caters to every section of the society including the bottom of the pyramid (BoP).

Aravind has also started vision centres to cater to people with cataract as well as for those with rare eye problems such as glaucoma, retinal disorder, etc. The first vision centre was started in 2004 and most of these vision centres are located in rural areas. Each vision centre caters to a population of about 50,000. At present, there are 14 vision centres in Madurai.

Over the years, with the addition of several other activities Aravind Eye Hospitals has evolved into Aravind Eye Care System. The Aravind Eye Care System has many divisions:

- Aurolab: a manufacturing facility to manufacture intraocular lenses;
- Lions Aravind Institute of Community Ophthalmology (LAICO): a training centre;
- Aravind Medical Research Foundation: a centre for ophthalmic research;
- Aravind Centre for Women, Children and Community Health: a research centre for women and children;
- The Rotary Aravind International Eye Bank: an international eye bank. ¹

► Sustainable Solutions

High Asset Use

Aravind Eye Care follows unique HR practices. It trains mid-level ophthalmic personnel, mostly women from villages, who are trained in a two-year course. These women, who have never had the chance to go to college, can get the opportunity to enter the work stream as mid-tier technicians. 60% of Aravind's workforce is made up of these women. These women perform many routine tasks which help the surgeons to operate at a high volume with an increased efficiency.

Additionally, standardized procedures have been set up at Aravind in order to maintain a high quality in the medical attendance. In an innovative way, Aravind has also maximized the use of physical infrastructure in their operation theatre. Operation tables and surgical microscopes were installed in such a manner that a surgeon can perform one surgery and then immediately move his microscope to perform the second surgery on the adjacent table. Hence, huge cost reduction, uniform quality output and economies of scale could be ensured.

Process Re-engineering

Furthermore, Aravind has innovatively developed the so-called 'Forecasting Table'. A 'Forecasting Table' gives the hospital an idea on the inflow of expected patients on a particular day. Some other indicators are also considered in the development of the 'Forecasting Table' such as national holidays, festivals, political movement in the state and city, etc. The table acts as an alert signal to manage human resources in terms of surgeons and staff more efficiently. It is usually made a year earlier but revised every month for the remaining period. The trend of past patient inflow helps the hospital to make forecasts for the coming year.

Aravind also follows an integrated management system. The system helps the hospital staff to monitor the amount of time a patient spends in a particular unit. For example, if a patient remains in a unit for more than 90 minutes a red alert shows in the system. The designated staff acts immediately and checks the reason for delay. The situation of red alert is rare as the movement of patients is well taken care of with the help of staff within a unit.

Price Modelling

The innovative 'Price-Modelling' of Aravind has made the service affordable to every segment of the population. It charges patients according to their 'willingness to pay'² for the service. Patients are not



required to show any identity proof (usually a hindrance in obtaining any free service) in order to get free treatment.

The pricing policy is done in such a way in order to capture as much 'consumer surplus'³ as possible. There are four options available to patients:

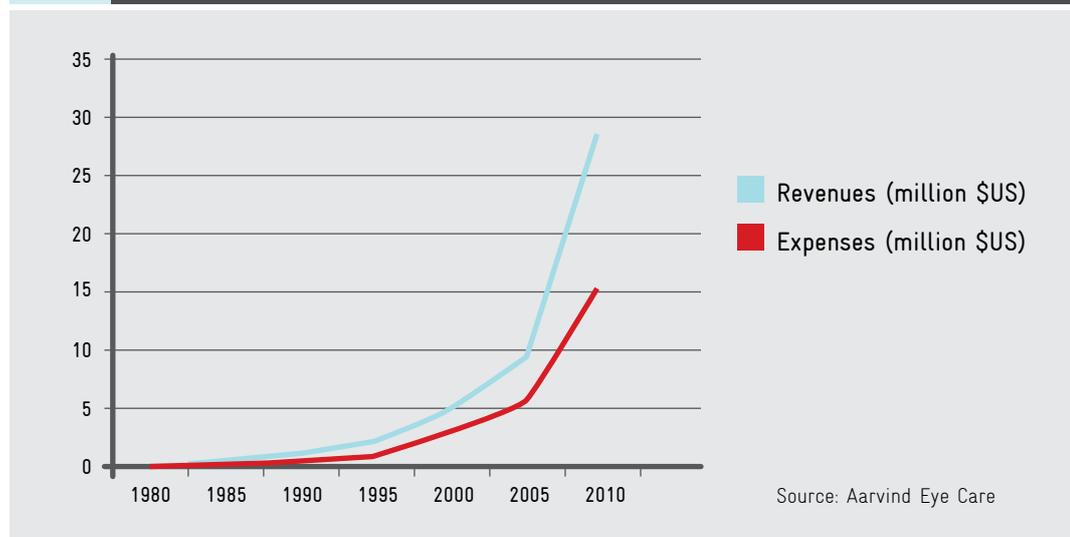
- 1 Free of cost treatment
- 2 Treatment with minimal fee
- 3 Treatment with regular fee (the market price)
- 4 Treatment with premium fee (for additional luxury features like AC rooms, etc.)

A normal cataract procedure costs Aravind approximately 18.56 Euro. Generally, Aravind receives 11.14 Euro as a subsidy from the government of India, for every cataract patient treated free of cost through the outreach camps. Hence, Aravind spends only 7.42 Euro from its revenues for every free cataract treatment at the outreach camps. Such an innovative pricing model has been possible because Aravind has been able to reduce its operational costs. Additionally, every fully paying patient is cross-subsidizing 3-4 patients who cannot pay the fees.

Financial Sustainability

Aravind has maximized the use of physical infrastructure such as operation theatres by installing operation tables and surgical microscopes in a manner that a surgeon can perform one surgery and then immediately can move his microscope to perform the second surgery on the adjacent table.

FIG. 1 Development of revenues and expenses of Aarvind Eye Care



Aravind has employed the same strategy to its human resources policies. It has divided the surgery into sub-parts and has created specialists for each sub-part. Ophthalmic surgeons for instance are best in performing surgeries instead of engaging into other preliminary tasks and hence, can use the time saved to enhance their volume of surgeries. This in turn reduces the cost to the hospital which enables Aravind to offer more affordable treatments. The system is so efficient that a surgeon can perform up to 2,000 cataract surgeries in a year as compared to 400 surgeries performed by an ophthalmologist on an average in India and 200 on an average in the US.

To cut down the cost for cataract treatment, Aravind started manufacturing intraocular lenses (IOL) at Aurolab in 1992. Earlier the imported lenses used to cost the hospital around 74.24 Euro per IOL. With the help of Aurolab the cost of IOL has been reduced to 1.48 Euro. Currently, Aurolab manufactures 7% of the world's IOLs used in more than 120 countries, resulting in a drastic increase in their revenues.



Social Impact

As a part of their outreach activity, Aravind hospitals started so-called 'Eye Care Camps'. By the year 2011, Aravind had organized approximately 2,100 such camps across Tamil Nadu and Kerala per year⁴. The main objective of these camps was to reach out to as many as possible people that are suffering from needless blindness.

The eye camps are similar to the hospitals. All the procedures done in a hospital are also done in the eye camps except from surgeries. For instance, screening of patients and providing glasses is taken care in the camps. In case patients need a surgery, they are transferred to the hospital free of cost. Aravind normally follows up with these patients after the treatment by inviting them to camps conducted near their location.

As a marketing strategy, Aravind has also started collaborating with community partners. The partnership format may differ from one camp to another. At present, there are about 20-25 camp organizers in Tamil Nadu and Kerala.

► Innovation Culture

Aravind's ability to innovate has its origin in the vision of its founders and the continuous innovation culture that is prevalent in the system. Every employee at Aravind is part of the innovation culture since its inception. The staff is regularly updated on new developments. Staff members are encouraged to provide innovative ideas to tackle challenges they are faced with while dealing with hospital processes. Those ideas are accumulated through monthly meetings of heads of the nursing staff and the management team. An effort is made to implement these ideas within 72 hours.

Footnotes

- 1 (<https://wiki.brown.edu/confluence/download/attachments/9994241/Aravind+case.pdf?version=1>)
- 2 'Willingness to pay', in economics is defined as the maximum amount an individual is ready to pay for a good or service.
- 3 'Consumer Surplus' is the difference between a person's 'willingness to pay' and the amount that he/ she actually end up paying.
- 4 Mehta, P.K. & Shenoy, S., 2012. Infinite Vision. 1st ed. New Delhi: HarperCollins



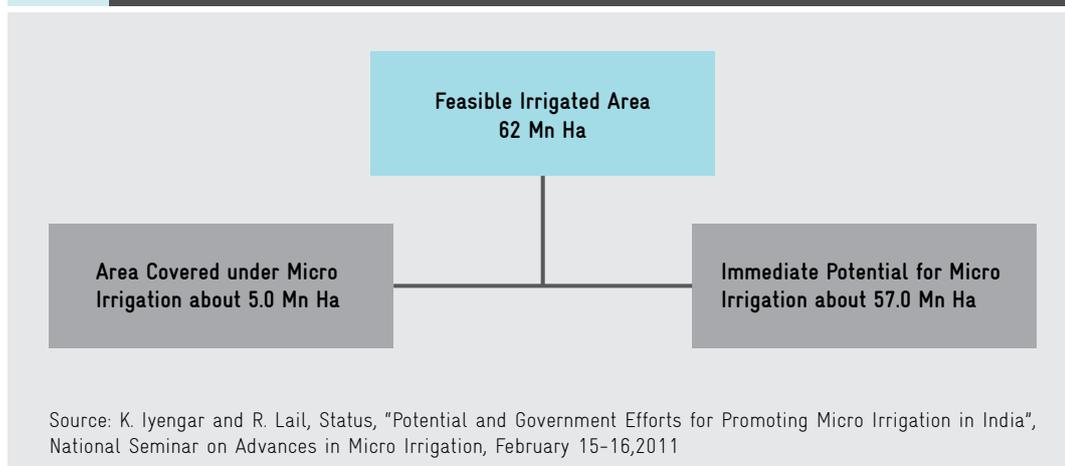
3.2 Jain Irrigation Providing Tailor-Made Micro Irrigation Solution

Jain Irrigation System has developed a Micro Irrigation System designed specifically for smallholder farmers. The model is tailored to cater to smallholder incomes and farming conditions, which reduces water usage considerably. The model also includes purchasing of fruits and vegetables through its food processing division. Jain Irrigation System has also started a certification system JAINGAP for farmers which will help them in export of crops to international markets.

► Background

India is an agrarian economy with more than half of its population dependent on agriculture for their livelihood. In developing countries like India, irrigated agriculture plays a vital role in contributing to domestic food security and poverty alleviation. However, a looming water crisis across the world is forcing researchers to find ways to reduce water usage. For maximum crop productivity it is very essential to supply the optimum quantity of irrigation water at proper timings. Over the years the agricultural productivity of India has declined due to many reasons such as excessive use of chemical fertilizers, water scarcity, droughts etc.

FIG. 2 Potential irrigated area in India



One of the ways to increase agricultural productivity has been showcased by Jain Irrigation Systems Limited (JISL) in India through micro irrigation systems. Micro irrigation system is a method of irrigation in which water is applied directly to the root zone of plants at frequent intervals in precise quantities based on plant requirements. It increases the land productivity drastically and also helps in solving the problem of water scarcity.

► Innovative Business Model

In 1963, Bhavarlal Jain started 'Jain & Brothers' as a trading business. Soon, the company started selling PVC pipes to farmers and also acquired agencies for a variety of agricultural products like insecticides, fertilizers and seeds. Over time, he realized that there was insufficient supply of PVC pipes in the market and hence set up a PVC pipe-manufacturing unit. By the end of 1984, 'Jain & Brothers' had nine pipe-manufacturing units.



In 1987, 'Jain and Brothers' introduced a Drip Irrigation System to its business line and was renamed 'Jain Irrigation Systems Ltd. (JISL)'. Jain Irrigation System ventured into drip irrigation system business based on its guiding principles. As per the guiding principles of JISL, "JISL gets involved into a business only when it is sure that it can add value to its customers and to all the people in its entire value chain." As the company operates in the agricultural sector, it has been very particular about benefiting farmers.

Previously, other companies had introduced drip irrigation in India but most of them failed due to the reluctance of farmers and lack of support from the government. The main reasons behind this failure were high costs associated with drip systems, and small land holding patterns (drip systems are more appropriate for large farms) in India. Similarly, many farmers were not aware of the benefits of new technologies and hence reluctant to adapt those.

To confirm the feasibility of drip irrigation systems in India, the company first did a pilot project within its own farms. It then rolled out the product to farmer friends, followed by the commercial launch in the market. JISL also carried out surveys to gather farmers' perspective on the technology. The survey however indicated that Drip Irrigation System would not be affordable for all farmers in India. The company also realized that simply importing and trading these systems would not be beneficial for the farmers as well as for the company. Hence, to make it affordable by all the strata of farmers, it started manufacturing all the components of drip irrigation systems within India.

In 2007, JISL came out with a certification called JAINGAP in cooperation with International Finance Corporation (IFC). It is a localized standard based on the internationally recognized GLOBAL GAP which seeks to ensure that farmers use Good Agricultural Practices (GAP) to enhance their productivity and comply with food safety standards. The certification was launched as a response to the increasing pressure on last mile traceability of agricultural produce and the use of pesticides. It is a huge manual and has been proved very restrictive in the Indian context as the majority of farmers are illiterate and have small land holdings. There were various other challenges faced by farmers to comply with GLOBAL GAP. For instance, in order to be certified a farmer must store pesticides in a separate room. However, considering the living conditions of an average Indian farmer, it is impossible to have a separate room for pesticides.

JISL recognized these challenges and came out with JAINGAP which is a basic certification and is recognized by GLOBAL GAP. By using JAINGAP, farmers are able to reduce their input costs with efficient utilization of water and pesticides leading to greater output and better financial returns. So far, more than 2000 farmers have been certified with JAINGAP.

This certification has helped JISL in increasing its global footprint. Syngenta for instance worked with the company for providing safety training to the farmers using JAINGAP. Additionally, Bayer Crop Science has approached JISL to do a similar project. More recently, Coca-Cola has also approached the company to source sugar from JAINGAP certified farmers. It is known that Coca-Cola buys close to 250,000 metric tonnes of sugar from India every year, providing Indian farmers big business opportunities.

► Sustainable Solutions

High Asset Use

Given the support and handholding provided by JISL, farmers are enabled to have better yields and remain in constant contact with JISL. Against this background, JISL started a new concept by recruiting so called gram-sevaks (village helpers) in 2009. Gram-sevaks are young people from local villages that are given a 4-6 week training to apply the system. These gram-sevaks then work with local farmers to assess their needs and requirements related to the irrigation system and the farm. Based on their assessment, they provide inputs to the agronomists. The agronomist provides technical know-how, suitable cropping pattern, the type of fertilizers and drip systems required in a particular farm to the farmers. Once the



drip irrigation system is installed in the field, the gram-sevaks and agronomists check its condition periodically. The company has also introduced a system of coupons for after-sales service and provides every farmer with three coupons free of cost.

The company also holds strong linkages to the local community as it provides employment to those people. The company pays 94.87 Euro as a starting salary to each gram-sevak. A motorbike and a mobile phone are given to each gram-sevak to increase their connectivity and mobility. Based on their performance and experience, their salary can go up to 238 Euro a month.

In 2002, JISL also launched a contract-farming model which is built on selecting progressive, receptive farmers. JISL provides these farmers with high-quality seeds, access to a micro irrigation system, fertilizers, and other inputs. JISL procures fruits and vegetables directly from 4,150 contract farmer suppliers and indirectly through traders who source from over 25,000 farmer suppliers.

Thus, the company is providing a product acquisition package rather than just the product. The company not only sells the irrigation equipment but also provides various services like training, after sales, maintenance and repairing.

Process Re-engineering

JISL came up with an integrated model. On the one side they directly provide drip irrigation system to farmers, and on the other side they offer technical as well as agricultural support. Thus they are able to provide tailor-made solutions for farmers to suit different cropping patterns in different land terrains. Additionally, even before the drip irrigation system is put in place, an engineering survey is conducted by the company to check the farm size, water source and the equipment as well as the agro-climatic details. The company then analyses the data to design the irrigation system that is best suited for the farm and the cropping pattern.

Just to cite an example: An onion cultivation farmer in the Akola district of Maharashtra was able to reduce his water requirement by 50% after the installation of the drip irrigation system. In addition, his total net income with the system has increased from 163 Euro (250 USD) to 653 Euro (1000 USD).

Environmental Sustainability

JISL recognises that long-term sustainability, especially in the agriculture sector, can only be achieved by being in harmony with the environment. The company thus has set up two biogas plants, one with the huge capacity of 1.6 MW and the other one with a relatively small capacity of 150 KW. The bigger plant caters to the company's agri-processing unit having electricity requirement of about 30%. About 200 metric tonnes of waste is utilized to generate 1.6 MW of electricity. However, not all the waste that is utilized at the plant is generated internally, the company hence is buying sugarcane bagasse from local producers. Thus, the company has successfully provided a solution to use renewable energy instead of conventional coal energy. Additionally, the electricity produced is cheaper and a more reliable option. The cost of electricity produced by the JISL's biogas plant is 0.03 Euro per unit as compared to 0.06 Euro per unit for electricity through the grid.

► Innovation Culture

JISL has come up with innovative approaches to fill the market gap. Since 30% of India's agricultural area is irrigated through canals, JISL has come up with an innovative concept of creating 'diggies' (farm ponds) near canals to store water for drip irrigation. The main reason behind such a concept is that canal systems can work even with fluctuations in water supply but drip irrigation systems require continuous supply of water.



JISL is the leading company involved in tissue culture of plants. Currently, about 70,000 hectares of land is used for banana cultivation in Jalgaon region of Maharashtra. About 60 million tissue cultured plants have been cultivated in this region. JISL is also the first company in the world to do a successful tissue culture of pomegranate. Similarly, JISL has also done tissue culture of rice and onion to increase productivity and the life cycle.

As a part of their innovation policy, JISL established an R&D lab in early 1990s, which conducts biotechnological research. The first innovation at a R&D lab was tissue culture of banana. Conventionally, a banana plant used to take about 12-18 months to grow and would bear about 12-15 kilograms of fruit. Usually, it would bear fruits only once in its lifetime. Additionally, farmers used to cut daughter plants entirely in order to provide the required nutrition for the mother plant. However, JISL's R&D lab did experiments and observed that after the maturity of mother plant, the daughter plants can also survive without causing much harm to the mother plant. Hence allowing the banana plant to give fruits twice in its lifetime (with the help of daughter plants) and that too in a much shorter duration. This has resulted in a shorter growth period of only 11-12 months and bigger output of about 25-30 kilograms of fruits in its lifetime.

► Future

The company is in the process of setting up a Non-Banking Financial Corporation (NBFC) to ease out their burden pertaining to the high upfront cost of the drip system irrigation systems. Currently, the Indian government provides subsidies of up to 50-70% of the cost to the farmers if they opt for drip irrigation systems. However, farmers are only required to pay 30 to 50% of the cost of drip system on the date of installation as the rest of the subsidy amount from the government comes only after six to twelve months, leaving JISL with open bills for a long period.

With the help of NBFC the whole subsidy as granted to the farmer is paid to JISL on the date of installation. After receiving the government funds the entire subsidy amount is paid back to NBFC.

Additionally, JISL seeks to expand their market coverage. At present, there is a total of 62 million hectares land under irrigation in India out of which only 5 million hectares have been covered by drip irrigation systems so far. Capturing these markets provides additional growth potential for JISL.



3.3 CleanStar Mozambique

A Promoter of Sustainable Farming

CleanStar Mozambique provides farmers with an alternative farming system, introducing multiple crops, and an alternative cooking fuel in Africa. CleanStar Mozambique is also promoting the use of “ethanol” produced from cassava as an alternative fuel thus reducing charcoal production and consequently deforestation.

► Background

In rural Africa, many families are engaged in a so-called ‘slash-burn-degrade-move’ farming which besides other factors causes low productivity. In addition, a lack of technical skills, lack of improved seeds and other agricultural inputs, access to markets, etc. has resulted in an overall farming crisis in the past years. This has not only caused losses of income for farmers, but also forced them to produce charcoal by burning trees to earn cash. Hence, about 80% of the 400 million people living in cities use charcoal as cooking fuel⁵.

Furthermore, Africa suffers from widespread nutritional insecurity and food price inflation. For many urban families the inflated prices of imported food and the low levels of indigenous food production are a major reason for poor nutrition. At the same time energy prices have also increased. Charcoal prices for instance have doubled in the past 3 years as forests keep on receding.

Charcoal is not only an expensive source of energy but is also extremely polluting and environmentally destructive⁶. It is estimated that 2 million deaths occur per year due to indoor pollution caused by charcoal. According to the World Health Organization charcoal smoke inhalation is equivalent to smoking two packets of cigarettes in a day.

In addition to the adverse impacts on health, nearly a third of Africa’s seven million square kilometres of forest has already been burned for charcoal, stripping the continent of vital biodiversity. This is contributing majorly to the projected 6.7 billion tons of greenhouse gasses African households are expected to emit into the atmosphere by 2050⁷.

► Innovative Business Model

CleanStar Mozambique is a joint venture of Novozymes and Cleanstar Ventures. It was founded with the aim to address challenges of low productivity and charcoal production in Africa by:

- Providing an alternative farming system,
- Introducing multiple crops, and
- Suggesting an alternative cooking fuel to reduce charcoal production and consequently deforestation.

► Sustainable Solutions

High Asset Use

CleanStar Mozambique is helping smallholder farmers to implement an environmentally restorative agro-forestry model on their land in Mozambique’s Sofala province. The model is designed to rehabilitate the sandy soil with nitrogen and organic matter while producing a range of cereals, legumes and animal fodders. The model is also designed to greatly limit the need for on-going external inputs such as new seeds or fertilizers. Instead, farmers use low input agroforestry and intercropping techniques that primarily require their workforce. The model includes plantation of various trees and crops in rotation. The farmers maintain ownership and control of the land and crops given to them. The farmer is free to



consume whatever is needed for their families⁸, and to sell the surplus to CleanStar. The farmers take their surplus production to the nearest CleanStar 'Community Processing Centre' (CPC) and receive immediate payment. The CPC also provides the farmers with improved planting material free of cost, for each new season⁹.

Additionally, CleanStar offers farmers necessary training and inputs to implement the agro-forestry model on their own abandoned land. The training and inputs are provided free of cost so that the farmers will remain committed to the partnership. During the documentation of the case studies CleanStar had plans to start the production of processed food for urban people.

The agro-forestry model also includes the use of non-flour fraction of cassava to produce ethanol as cooking fuel. The surplus cassava collected from the farmers is converted into ethanol. The first cooking fuel facility was opened at Dondo in Sofala province¹⁰ in May 2012. In November 2012, the facility started commercial production of ethanol-based cooking fuel with a capacity of 2 million litres per year. Currently, the ethanol fuel produced from surplus cassava is sold in Maputo.

In addition, CleanStar is planning to capture and sell CO₂, which is emitted in large amounts during the production of ethanol to the aerated beverage industry. One of the companies in the venture is ICM Inc. that has designed and commissioned the ethanol plant. Bank of America and Merrill Lynch recently entered in a Certified Carbon Emission Reductions financing agreement with CleanStar Mozambique. It includes upfront payment of a premium for CO₂ credits that will be issued once the use of ethanol instead of charcoal has been certified.

CleanStar has also started producing ethanol stoves under the name of Ndzilo. The ethanol stoves are manufactured locally based on a technology developed by Dometic, a Swedish company. It sells the cook stoves and fuel through its own network of strategically located retail stores. The first shop was started in April 2012 and sold over 2000 cook stoves in the first two months. As of October 2012, there are 5 stores in Maputo, and more are planned to open by the end of 2013.

Micro-distribution

The company is setting up reseller kiosks in the neighbourhoods to increase availability of ethanol. By the end of 2012, CleanStar had set up 50 kiosks in neighbourhoods that already had CleanStar shops. Established vendors operate these reseller kiosks. They supply ethanol to the Ndzilo stove owners within a small area. The vendors get a commission fee on the sale of Ndzilo fuel.

Price Modelling

The ethanol-based fuel is at a similar price level as charcoal. Although ethanol is not cheap, it is still affordable for the target market. For instance, 5 litres of ethanol cost 5.16 Euro which is the weekly fuel requirement of a household in Maputo. Therefore, ethanol-based fuel has become a financially viable option to charcoal.

Similarly, the price of an ethanol cook stove is about 18.44 Euro and has a five-year warranty. The charcoal cook stoves, however, are cheaper with prices ranging from 2.95 Euro to 11.80 Euro, but they generally do not have a long life and do not last longer than a year.

CleanStar Mozambique also introduced a payment plan where customers can pay for the stove in three instalments. This plan has been introduced to encourage potential users who cannot afford to buy the stove in a one-time payment. In the first instalment the customer has to pay around 5.16 Euro whereas the customer is free to choose how to settle the amount in the other two instalments.



Environmental Impact

Through its agro-forestry method this venture has created a highly productive and sustainable alternative to the slash-burn-degrade-move agricultural practice and production of charcoal for income generation. It is estimated that by 2014 the demand for charcoal that causes approximately 4,000 hectares worth of native forest loss annually will be eliminated. The greenhouse gas reductions from eliminating charcoal demand will be about 500,000 tons of CO₂-eq per annum, assuming each Ndzilo stove reduces emissions by around 6 tons CO₂-eq per annum. Additionally, the venture will ensure the restoration and reforestation of 2.4 million native trees in shelterbelts over the 3,000 hectares of smallholder land.

► Challenges

In the beginning it was difficult to find the right local partners and qualified people to work for a new and unknown company in Mozambique. There was also resistance from certain departments of the government as they were unsure about CleanStar Mozambique's strategy of using surplus cassava to produce cooking fuel. Cassava is a staple crop in local diets which might pose a threat to local food security. However, the concern for food security was overcome as government officials were able to understand CleanStar's "integrated food and energy production system" through field visits and dialogue with participating farmers and communities.

Another hurdle was the lack of infrastructure. The company has invested in raising the ground level at swampy sites, making a road or fixing a bridge where it was required. Likewise, it has also helped in building communications systems. Eventually, the government accepted CleanStar's vision and qualified local workers started to join the company. Farmers also noticed the success of CleanStar's trial plots in their communities, and became willing to adopt CleanStar's farming model.

► Future

As of late 2012, around 1000 farmers are engaged with CleanStar Mozambique. By 2014, the venture will involve 3000 smallholders over 6000 hectares, supplying 20% of Maputo households with a clean and cheaper alternative to charcoal, and protecting 9000 acres of indigenous forests per year¹¹. CleanStar Mozambique will also be processing packaged food from beans, sorghum, pulses and soya that the farmers will grow to sell in the urban markets. While the company has been earning revenues for less than 6 months, their sales of fuel and cook stoves have been higher than initially projected and CleanStar Mozambique is looking forward to a successful expansion across Maputo in the coming years.

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- Footnotes**
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3.4 Desicrew

A Rural BPO in India

DesiCrew with its reverse migration model has been able to make a social impact by generating employment opportunities through its chain of BPO outlets in rural India. DesiCrew has been an example for an inclusive business that seeks to showcase how technology can bring a more holistic development of the rural region, increasing productivity, quality and standards of living of rural people.

► Innovative Business Model

DesiCrew was started by Saloni Malhotra who has an engineering background. She started her business idea with the assumption that if rural poor are unable to come to the cities for jobs, let the jobs be taken to them. She recognized that there was a huge untapped, educated and employable but currently unemployed talent pool that did not have access to viable livelihood options.

Though the emergence of business process outsourcing in India is not a new phenomenon, their presence in rural areas is fairly recent. Saloni Malhotra set up DesiCrew under the guidance of Dr. Jhunjhunwala of the TeNet group from IIT Madras. She decided to set up DesiCrew in rural areas of Tamil Nadu because of high literacy rates and the Enhanced Rural BPO policy of Tamil Nadu government, which provides incentives to entrepreneurs to set up BPO units in any of Tamil Nadu's villages.

DesiCrew's Rural BPO model was incubated in IIT-Chennai's Rural Technology Business Incubator (RTBI) in 2005. DesiCrew Solutions Pvt. Ltd was spun off as a commercial entity in February 2007. The first centre was set up in Kollumangudi, Tamil Nadu¹². The company received funding and support from IIT Madras, Villgro (Villgro Innovation Foundation), State Bank of India (SBI) and Venture East (Indian VC Fund Manager). Currently, DesiCrew has 3 delivery centres – one in Karnataka at Kaup, and two in Tamil Nadu at Kollumagudi and Appakoodal. It also has offices in Chennai and Bengaluru.

DesiCrew offers a wide range of services. DesiCrew's back office services cater to verticals such as Insurance, Market Research, Internet & Mobile, E-Governance, and the Social Sector. The services that DesiCrew provides are¹³:

- Generate, Populate and Moderate content
- Digitization – Scanning and Data Entry
- Live chat responses
- Mail room activities
- New Business set-up
- Project Management
- Secondary Research
- Transcription
- Translation
- Beta testing of web products
- Localization of web products
- Website monitoring
- Custom

► Sustainable Solutions

High Asset Use

The DesiCrew rural delivery model is a network of micro-centres strategically selected across rural and semi-urban locations that provide back-end services to global clients. Each centre is professionally run by 25 people working in 2 shifts. Each centre functions separately, with separate operations and different



operating models. One of the distinguishing features of DesiCrew is that it invests and owns everything. DesiCrew's Chennai office acts as the interface between their client and the centres in non-urban areas. They provide back-end services to global clients.

The company trains its staff on a continuous basis, an activity that starts immediately after an employee joins DesiCrew. The company also does on-the-job training when there is a need for specialised skills depending on the project. Apart from project-specific training, continuous learning is provided in language skills, Internet and e-mail usage, and other soft skills.

Most employees at DesiCrew are recruited on the reference of current employees or of the village panchayat. Subsequently, undergo a recruitment process involving a written test, process specific tests and interviews. Subsequently, they undergo extensive training process where employees are trained in the work areas as well as in soft skills. DesiCrew also has tie-ups with educational institutions from where they recruit and to whom they provide internship opportunities.

In the beginning, mostly women used to apply for jobs at DesiCrew. However, after witnessing the success of DesiCrew and realizing that it is a viable income opportunity, men have also started approaching and joining the centres. Currently, the company has 228 employees across four centres in Kaup in Karnataka and Kollumangudi, Apakoodal and Chennai in Tamil Nadu.

Financial Sustainability

The operational costs are relatively low for DesiCrew even if it follows a corporate model like other BPOs, which makes it economically sustainable. The company has much less overhead cost which in turn lowers costs for the clients, too. In addition to this, the attrition rates are very low, as employees are less inclined to leave a job that gives them income security and an improved quality of life without having to move away from their homes and their families. A lower attrition rate means training costs are also much less.

Social Impact

DesiCrew is having a significant social and economic impact on local people. As the income of the employees has increased significantly, they no longer need to leave their homes and villages in search of jobs. As these employees work near their homes they can save as much as 90% of their earnings, a far cry from the 10% they would have in cities¹⁴. Thus, migration of rural people to urban cities in search of jobs has decreased.

► Challenges

Though conditions were ideal for setting up a rural BPO, DesiCrew was facing many challenges. Till recently, the general perception towards a rural BPO was not a favourable one as BPOs have traditionally been associated with urban areas. Changing that perception was an uphill task for DesiCrew. But when clients visited the BPO centres and saw that quality was as superior as urban BPOs, the views, however, began to change.

► Future

In the last five years, DesiCrew has been doing well. It had an early mover advantage when it was launched, which is one of the reasons for its success. Despite the success, DesiCrew is not looking to expand very fast. Though it is aiming for a pan-India presence, the company wants to make sure that its business model is optimal and that it works before deciding to expand.

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3.5 MedAfrica

Mobile Health Solutions for African Countries

MedAfrica is a Medical Services Content Platform that seeks to create health awareness among consumers from the comfort of their mobile phones. It also seeks to increase interactions and purposeful engagements between health practitioners and patients. With a mobile phone penetration of 26 million people in Kenya, MedAfrica is looking to bridge the health provider gap through the use of mobile applications.

► Background

In Africa, health issues have become an increasing problem. According to the World Health Organization, more than 30% of children under the age of five show stunted growth in Africa. At present, there are roughly around 7,000 doctors, serving a nation of 40 million people. One of the key challenges in access to health care is the lack of information about health services available to people in remote areas. To overcome the challenge of access to health care Shimba Technologies created a mobile application named “MedAfrica”. It is a high quality, easy to navigate solution offering various information on health related issues. It enables individuals to get certified information such as doctors’ contacts, hospital locations, drug information, symptom checkers, first aid information, as well as relevant SMS-based alert services.

► Innovative Business Model

MedAfrica seeks to improve the health of communities and regions in which it operates by increasing access to health care related information and services in Africa. The application can be used across a number of mobile platforms. It contains services that can easily be added or removed; thus personalizing it for each user. It provides users with a menu that has several options such as contacts of doctors and their specialties, hospital listing, first aid, diet guide and symptoms checker. Currently, the health content is free of cost. However, the company intends to add subscription fee for premium content in the future to generate extra revenue.

During the elaboration phase of the case studies, MedAfrica also envisioned to expand their service base by providing new services such as emergency details, drug authentication, health tips, insurance listing, travel health and health forums. The ultimate objective of the app is to make healthcare information affordable and accessible to Kenyan people. At the same time, the company plans to reach out to people in other countries of Africa such as Nigeria, Egypt and Rwanda.

► Sustainable Solutions

Technology empowerment

Since access to information on health services is critical for end users, Shimba Technologies used its existing IT enabled services. MedAfrica leveraged upon its existing mobile application Tuvitu. The Tuvitu application seeks to provide information to its users on a variety of services including health, entertainment, weather, traffic etc.

Price Modelling

MedAfrica was set up as a social enterprise by Shimba Technologies. Its financial model consists of:

- 1 Listing fees from doctors and other health providers
- 2 Subscriptions for 10% premium content
- 3 Sponsorships and Advertisements



Financial Sustainability

MedAfrica is planning to have sponsorships from health brands for financial sustainability. Additionally, it wants to raise its own funding and plans to be a self-sustaining enterprise in a span of the next three years. Moreover, it is focusing on building partnerships with other social entrepreneurs and mobilizing resources from government and international donor agencies.

Shimba has had 40 mobile applications on the Nokia Store in the past one year alone with over 2 million downloads. Steve Mutinda points out, "We intend to drive traffic and monetize from the applications. Our targets are 10 million users on our applications by the end of the year with more applications ready to be launched."

MedAfrica has also entered in a partnership with Nokia. Nokia's developer program helps MedAfrica to create relevant and targeted applications.

► Future

MedAfrica plans to integrate a systematic feedback loop to improve the communication platform. For this purpose, a pilot project was conducted in the biggest slum of Nairobi in January 2012. The results showed that an adjustment of the application for high and low end phones should be an immediate action point for MedAfrica.

During the conduction of the case study, MedAfrica was introducing version 2.0 that would provide almost all relevant data regarding health services to the users such as feedback on the quality of services provided by doctors, etc. Additionally, the company is hoping that the Medical Board of Kenya may use the application platform to improve health services and address specific gaps in the system.



3.6 Sekem

A Holistic Farming Initiative in Egypt

SEKEM promotes Biodynamic farming to improve the lives of farmers in Egypt. It is known as the bio-pioneer of the region, as it has significantly contributed to food security through desert land reclamation and sustainable agricultural practices.

► Background

In Egypt 32% of the workforce are employed in the agriculture sector. However, this sector remains the least developed one in Egypt. The agriculture sector represents about 15.5% of the country's GDP as compared to 32.1% from the industrial sector and 52.4% from the service sector. The idea of SEKEM came into existence when Dr Abouleish visited Egypt in 1975 and came across deplorable economic and social conditions. He established SEKEM in 1977, as he wanted to promote biodynamic farming to eradicate poverty and improve the livelihoods of many farmers in Egypt.

"Every day one has to find a mission impossible, then only innovations will happen"
– Helmy Abouleish, CEO, SEKEM

► Innovative Business Model

Biodynamic agriculture is a specific form of organic agriculture. SEKEM promotes a biodynamic agricultural method which includes the use of compost to turn desert land into living and healthy soil. It also includes the use of resilient crops and natural predators to reduce the use of chemical fertilizers and pesticides. It builds up solid matter in soils and closes the nutrient cycle to counter leaching, erosion and soil degradation.

The company has adopted biodynamic farming methods for all its crops, herbs, medicines, etc. It has started biodynamic cultivation with herbs, spices, medicinal and aromatic plants. This practice of biodynamic agriculture has impacted the soil quality and has transformed unusable soil into sustainable agricultural land and a healthy ecosystem.

In addition, SEKEM rears livestock to produce its own compost, grows cereals to feed the livestock, and uses crop rotation to enhance soil fertility. The surplus is sold in supermarkets and organic shops, both nationally and internationally.

SEKEM's commercial division produces, processes, and sells ecologically generated foodstuffs, natural pharmaceuticals, textiles, and other products. SEKEM group includes various other companies:

- LIBRA produces compost, milk, egg, meat and fodder;
- MIZAN provides healthy, profitable in- and outdoor grafted seedlings;
- SEKEM for Land Reclamation produces oils, rice and dried legumes by ownership as well as partnership with local farms. The network of independent farmers from all over Egypt provides SEKEM for Land Reclamation with cotton, grains and seeds;
- LOTUS produces organic herbs and spices from biodynamic plants;
- ATOS produces phyto-pharmaceuticals;
- NATURETEX processes organic cotton and ISIS is a food processing company.



► Sustainable Solutions

High Asset Use

In order to promote knowledge and learning on biodynamic cultivation SEKEM established Egyptian Biodynamic Association (EBDA) in 1994. EBDA is an NGO that provides biodynamic research and extension services to farmers all over Egypt and the world. EBDA consultants work with farmers to ensure efficient implementation of biodynamic methods.

It takes 3 years for a land to transform from a desert land into a fertile land. The first year is the zero year, where land is prepared to suit the needs of biodynamic cultivation. The second year is the transition year when the plantation of crops takes place and the third year is the certification year. In the transition year, EBDA consultants play a major role, as this is the most crucial phase. The consultants help the farmers with their farm management and documentation to get certified as “Organic Farms” according to international standards.

Currently, about 200 farms are under EBDA with a total area of 3361 hectares. Out of this, 16% of land is under SEKEM. Almost 75% of the farmers in EBDA sell their products to SEKEM. EBDA regularly organizes training workshops for farmers and agricultural engineers and supplies them with seeds and planting material from plants grown organically in EBDA’s experimental farms. These trainings are done on fertilization, compost making, and crop rotation.

Process Re-engineering

Biodynamic cultivation originated in Europe, where soil is rich and nature is in abundance. However, bringing biodynamic method of cultivation to Egypt was a big challenge, because of the extreme weather conditions. Thus, for SEKEM it was a big task to introduce this cultivation method in the soil of Egypt and to become commercially successful. The organization studied the process in detail and divided the process in various smaller steps so that areas of adjustments and re-engineering can be identified and worked upon.

One of the examples is the project conducted by SEKEM on cotton as cotton is Egypt’s most important cash crop but is highly affected by insidious pests. In close cooperation with scientists, farmers, consultants and consumers, SEKEM developed a biodynamic concept for organic cotton cultivation based on the use of pheromones to control cotton insects. The results were so convincing that the Egyptian authorities officially promoted the method. A direct result was a huge reduction in the use of synthetic pesticides by up to 90%.

Social Impact

SEKEM has provided livelihood for many small and medium scale farmers. The company has also made a strong commitment and investment in the community. The SEKEM Development Foundation has launched several initiatives such as providing education and healthcare. It has set up the SEKEM Kindergarten, SEKEM School and a vocational training centre.

In an effort to combat child labour, SEKEM has developed the Chamomile Children Project that provides tailored education as per the student’s skill and educational standing. SEKEM has also set up a medical centre that treats more than 30,000 patients every year. Additionally, SEKEM has launched the Heliopolis University for Sustainable Development in 2009. Its various programmes aim to improve Egypt’s capacity to conduct, publish and disseminate relevant research in the areas of medicine, pharmacy, biodynamic agriculture, sustainable economic, social sciences, community development and arts.



3.7 Waste Ventures India

An Inclusive Waste Management System Model of Waste Pickers in India

Waste Ventures is a social enterprise that aims to build a sustainable model of an effective waste management system. With the help of that model the company aims at providing technical assistance for waste pickers to become scalable, sustainable waste picker corporations that earn a fee for garbage collection, recycling and sustainable composting that allows the garbage picker to generate bio-fertilizer for sale to farmers, and monetizing carbon credits.

► Background

In a developing country like India, there is no well defined system for waste management. The amount of waste generated by urban India is growing at speed of 10% every year. Almost 40% of this waste remains uncollected, particularly in smaller cities and towns where population growth exceeds the infrastructure development¹⁵. The remaining waste is left to rot and produces methane, which is 23 times more harmful than carbon dioxide. It contaminates ground water and leads to several vector-borne diseases.

To manage this waste, the current Solid Waste Management system usually involves the government that hires contractors for trash collection of high volumes. This, besides other factors, has resulted in more garbage in landfills rather than garbage processing. The dumped garbage is collected by waste pickers who make a meagre income from recyclables. However, they are facing many health related issues by being exposed to the rotting waste. Hence, disposal of waste is not only a major environmental issue in India but also threatens the well-being of many people.

In 2009, social entrepreneur Parag Gupta studied the current status of the Solid Waste Management system and waste ecosystem in India. He observed that while there are many Solid Waste Management (SWM) nonprofit organizations for waste pickers, none of them guarantees economic rights through stable company employment. He also realized that the mismanagement of over 120,000 tons of urban waste generated per day is taking a massive toll on the environment, water, soil, and air quality of India's urban ecosystems¹⁶.

► Innovative Business Model

Through research Parag Gupta identified an existing market need and came up with an innovative and inclusive business model for waste pickers. Hence, Waste Venture India (WVI) was founded in 2009 with initial funding of 220,766 Euro from Peery Foundation. The funding was given for running the learning labs for three years and establishing Waste Ventures. Similarly, in 2011 Swift Foundation also gave a grant of 36,794 Euro for the learning lab in Osmanabad.

The aim of the organization is to create a new sector for solid waste management in India. With focus on tier-3 and tier-4 cities, the company is building a waste management system that is financially viable, environmentally sustainable and socially inclusive¹⁷.

The company is in its start-up stage. WVI is working in two stages:

- Stage one focuses on building waste picker companies owned and operated by waste pickers. WVI will provide technical assistance to social enterprises to create their own waste picker companies.
- In stage two, the company intends to focus on reaching more organizations through disseminating its experience.



Currently the company is operating in stage one. It is providing technical assistance to waste picker organizations and operates two integrated solid waste management projects in Orissa and Bihar.

► Sustainable Solutions

High Asset Use

Waste Venture India makes use of networks of waste pickers to address the problem of waste management in India. Almost 90% of household waste can be recovered through recycling, composting and 'up-cycling' (the process of using materials in their current state to create a new product). The company offers solutions for recycling and composting of most of the household waste generated. This is made possible by segregating the waste early and by training waste pickers to segregate waste at the time of collection from the household. This way, the dry waste is kept clean, preventing contamination of the organic waste which in turn can be used in agricultural applications, and a larger proportion can be recovered¹⁸.

The company also provides technical assistance in the form of a blueprint on low-cost environmental waste management. Through this blueprint, WVI provides solutions on collecting, sorting, composting and recycling of waste. Other than benefitting waste pickers, this blueprint also provides a solution to households to deal with the need for daily disposal of garbage.

Currently, the company is conducting multiple small-scale waste management projects in tier-3 and tier-4 cities of India, in the form of learning labs. Tier-3 and tier-4 cities are selected as they are less prepared to deal with the growing waste problems, often leaving residents without a viable waste management service. Similarly, these cities are closer to farmers who will be able to purchase the compost generated from organic waste. The purpose of the learning labs is to implement the blueprint and develop a sustainable model of waste management which will be scalable and globally adaptable. Currently, Waste Ventures is working on 3 learning labs in cities such as Indore, Damanjodi, and Motihari.

Process Re-engineering

In the current context of SWM in India, most of the households in tier-3 and tier-4 towns are forced to dispose waste in open lots and drainage ditches due to lack of doorstep collection service. To overcome this problem, Waste Ventures India (WVI) has broken down the process of waste management into modular components. They have redesigned each component in a manner which benefits the waste pickers and involves other stakeholders from the SWM ecosystem.

For instance, households are encouraged to segregate their waste in two fractions – biodegradable and non-biodegradable during primary collection. The information for segregation is given to households by trained waste pickers or in partnership with local social enterprises. The waste pickers further separate the material into recyclable, inert and biodegradable portions which are collected in separate crates on the cart or tricycle.

Organic waste, which accounts for approximately 60% of collected waste, is processed through thermophilic aerobic composting. The recyclables account for 25% of waste collected and consist of plastics, paper, glass, metal etc. A large part of this material is recovered during primary segregation and sold to the recycling industry. The remaining 10-15% is disposed at the landfill¹⁹.

WVI is working in partnership with Indian Grameen Services (IGS), a social organization, which focuses on livelihood solutions for waste pickers in Indore. As part of a project with IGS in Mahalakshami Nagar, WVI has involved waste pickers to collect household garbage and sort it into organic and recyclable portions. A collection fee of 0.48 Euro is collected from each household. There are five waste pickers who cater to 1000 households in this colony.



In addition to a household fee, the waste pickers are given an incentive of 5.90 Euro per month to dump organic waste into a compost unit set up on the periphery of the colony. The organic waste is turned into compost in 50-60 days by thermophilic aerobic composting. The compost is sold to the local households at rate of 0.11 Euro per kg. The remaining compost is then sold to a local contractor, Kisan Seva Kendra at the rate of 0.06 Euro per kg. It is estimated that within a month the compost unit will be able to sell 5000 kg of compost.

► **Innovation Culture**

WVI has worked in partnership with an engineer from Massachusetts Institute of Technology (MIT) to design a cart for garbage collection. The cart is easy to manage and enables the picker to avoid spillage of garbage during transport. Additionally, it is 40% more cost-effective than existing models. WVI is also exploring ways to monetize decentralized consumption of biogas from organic waste as either cooking fuel or a source for electricity.

► **Future**

During the conduction of the case study, WVI planned to expand to other regions. Those include smaller cities and towns in Andhra Pradesh, Bihar, Gujarat, and Maharashtra. By the end of 2015 the company aims to build 10 mature projects and 15 growth projects. Depending on the results the model can be easily replicated in the thousands of tier-3 and tier-4 cities across India.

Footnotes

15 Waste Ventures, 2012. Business Plan for Waste Ventures.
16 Ibid
17 Waste Ventures website <http://www.wasteventures.com/about-us/mission/> accessed on 8 October 2012
18 Waste Ventures, 2012. Business Plan for Waste Ventures
19 Waste Ventures website <http://www.wasteventures.com/services/waste-processing/> accessed on 12 October 2012



3.8 Safaricom's M-PESA

An Innovative Way of Money Transfer in Africa

M-PESA (M for mobile, pesa is Swahili for money) is a mobile money transfer service that allows users in Kenya to send and receive money and complete basic banking transactions using their mobile telephones.

► Innovative Business Model

M-PESA has been introduced as an innovative idea by Nick Hughes, a former Vodafone executive. He used the opportunity to close the gap in transferring money between urban and rural areas, and between the rich and the poor. Initially Nick tried to persuade the senior executives at Vodafone to start the project. However, his project was denied on the grounds that the company is legally bound to use its shareholders' money to achieve the best returns.

Nevertheless, the idea was appreciated at the World Summit for Sustainable Development in 2003. He was able to convince the UK government's Department for International Development (DfID) to fund the pilot project in Kenya. Nick's belief in the concept and his relentless pursuit of the idea helped him achieve to come up with an innovative product for mobile based money transfer in Kenya.

More than 90% of the world's population has access to mobile phones. Out of which 75% are from developing countries. Prof. Jeffery Sachs, Director of Columbia University's Earth Institute states that "The mobile phone is the most powerful technology for ending poverty in the world today". In addition, the statistics on access to mobile technology appropriately highlights the significant role of mobile technology in addressing the challenge of poverty.

Safaricom was launched in Kenya in 2007. Safaricom's M-PESA is the world's first mobile-based money-transfer service. It is an SMS-based system, which allows people to send, receive, withdraw and deposit money using even the most basic cell phone. The customers do not even need to have a bank account to avail it. While the service was designed to serve the people who lack access to a formal banking system or 'the unbanked', it has been widely used by all sections of the society, including 'the banked'. This is particularly because of the speed and reliability, which are the key features of M-PESA.

During the pilot phase, Safaricom (Vodafone's affiliate in Kenya) partnered with Faulu Kenya to check the acceptability and feasibility of M-PESA in Kenya's microfinance sector. They started with eight agent stores and made the service available to approximately 500 trial participants in three geographical areas of Kenya - Mathare, Thika and Central Business District. Initially, transactions through M-PESA were limited as the service mainly facilitated loan repayments. However, with the introduction of airtime purchase application, transaction volumes increased immediately. Even though the pilot was over in six months by May 2006, people continued to use the service. It was a clear indication of its acceptability and success. The pilot helped Safaricom in gaining valuable insights about consumer behaviour which helped the company in designing their strategies for the commercial launch of the service.

Currently, M-PESA complies to the minimal regulatory requirements determined by the Central Bank of Kenya. It has often been argued by bankers that there should be a strict regulatory mechanism for M-PESA to monitor the actions taken by the company for the deposits. However, these regulations might not be essential as neither Safaricom nor the Trustee accept deposits as banks do.



► Sustainable Solutions

Price Modelling

The company has made technology easily available for the poor. With the help of the service, people can perform various functions and avail services that were earlier inaccessible to them, either due to high transaction costs or social barriers.

Safaricom has designed its processes in a way that makes its operations economically sustainable. Currently, Safaricom charges a transaction fee. It is about 8 - 12% for small transactions and ranges between 0.74 – 3.69 Euro. However, the service is still cheaper and much more reliable than other money transfer services available.

Safaricom does not provide any interest payment on the deposits in M-PESA accounts, as it is a wallet service and not a savings account. Moreover, the interest that is earned through keeping deposits in the bank account is held by a trust account which is used for charity and community based services.

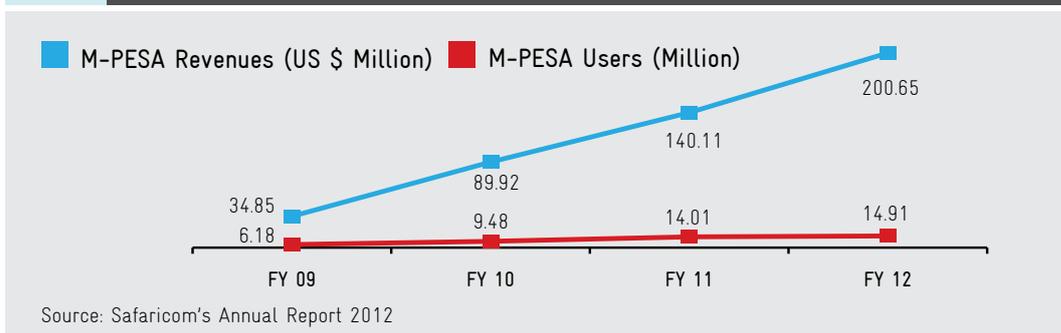
Micro Distribution

A noteworthy feature of M-PESA's operations in Kenya lays in their distribution channel. The company has employed a large number of cash merchants to facilitate transactions through M-PESA, thereby expanding its outreach to the remotest Kenyan villages. At present, Safaricom has around 17,500 cash merchants. Most of these cash merchants are either the airtime distributors for Safaricom or the local shopkeepers. M-PESA users can make monetary transactions by transferring the e-float to these cash merchants' mobile phones and can get paid in cash or vice versa. These cash merchants get commissions depending on the number of transactions they make. Giving incentives to the cash merchants for increasing the number of transactions has been the major driver of success for the model.

Financial Sustainability

The financial reports of Safaricom for FY12 indicate that there is an increase in the company's revenue through M-PESA by 43.19% to KShs 16.87 billion (equivalent to US \$200 million) as compared to FY11. A major part of the revenue is attributed to the increased volume of transactions through M-PESA by its existing customers. However, the company has also witnessed a growth in its user base by 6.45% which has further increased its revenues.

FIG. 3 Development of revenues and number of users of M-PESA



Environmental Impact

On the environmental front, Safaricom is actively engaged in reducing its GHG emissions. Many of its transceiver stations run on wind and solar power. The surplus energy from these stations is shared with the local communities by letting them charge their mobile phones. In return, the local people act as 'Voluntary Energy Guards' and safeguard the equipment from thieves. The company has also introduced solar powered cell phones, made from recycled materials. The solar powered handsets have solar panels for charging the batteries through sun exposure. The solar powered handsets are very convenient, especially in rural areas that are not connected to the electricity grid.



3.9 Husk Power Systems

Providing Electricity from Crop Waste to Rural India

Husk Power Systems (HPS) is a rural electrification company that uses renewable energy to produce and supply electricity at a low cost and in an environmentally friendly way. HPS is an innovative social enterprise that promotes decentralized power generation and distribution to remote villages in India. It generates electricity from rice husks which is abundant in rural areas.

► Background

Electricity is an essential commodity which ensures a better quality of life, and is also an indispensable input for economic and social development. But India has a serious shortage of electricity. The shortage is particularly acute in the state of Bihar where the supply is very unreliable. Most households have to use kerosene for lighting, and businesses are normally reliant on diesel generators for power.

For the founders of Husk Power Systems – Gyanesh Pandey, Ratnesh Yadav, Manoj Sinha and Charles Ransler – the problem of lack of access to electricity in Indian villages served as an opportunity. However, the ability to turn that opportunity into a successful business solution came from the persistent approach of its founders and the continuous customization and innovation of its processes.

► Innovative Business Model

The founders of Husk Power System were looking for affordable ways to address the shortage of electricity. They identified the potential for making gas from rice husk which is an abundant local resource. This process of gasification exists since World War II, called 'Biomass Gasification'. The technology, however, was primarily used by the rice millers to power their mills in dual fuel mode with a combination of rice husk and diesel.

In 2007, Gyanesh Pandey and Ratnesh Yadav finally adapted the gasification technology in such a manner that it now runs on single fuel mode using only biomass i.e. rice husk. The other two founding members, Manoj Sinha and Charles Ransler, worked on funding and gathered the initial investment required to set up the company through various business plan competitions in the United States.

As a result, Husk Power System (HPS) was launched in 2007. It is a decentralized power generation and distribution company with a mission to provide renewable and affordable electricity to the rural population around the world in an environmentally and financially sustainable manner²⁰. It is a 100% biomass based network of 25-80 kW small power plants using rice husk to produce electricity. The company operates in 500 villages and hamlets, mostly in the northern state of Bihar. So far, it has provided electricity to 35,000 households.

Since the first plant of Husk Power Systems was inaugurated in 2007, additional 80 plants are now operating in different parts of Bihar. The scale up was possible because of the substantial funding and investments from various international bodies such as Shell Foundation, Acumen Fund, Bamboo Finance, IFC, Draper Fisher Jurvetson, LGT Philanthropy and CISCO.



► Sustainable Solutions

Process Re-engineering

HPS first started its operations in the village of Bihar with the BOOM model in which the company Builds, Owns, Operates and Maintains the power generation and distribution system. However, in 2010 due to manpower constraints, the company shifted to the BOM (Builds, Owns and Maintains) and BM (Builds and Maintain)

model for subsequent plants. The BM model adopted by the company is very similar to the franchise model. The company only builds the plant and then sells it to an independent partner who eventually owns and operates it.

The BOM and BM models have also helped HPS in increasing its outreach to many more villages. At present, out of more than 80 plants, the initial 50 operate on the BOOM model and the rest on the BOM and BM model.

In the BM model, the partner is responsible for all costs and entitled to all revenues. Nonetheless, the partner has to pay a monthly fee of 118 Euro for maintenance and repair work to Husk Power System.

In order to attract financial institutions to support local franchisees, HPS rolled out the BOM model where the plants are Built, Owned and Maintained by HPS and operated by a local entrepreneur. The local entrepreneur has to invest a small amount and pays around 177 – 295 Euro per month to HPS.

The company uses bamboo poles and smart meters for the distribution of electricity to households in order to reduce the input costs. The smart meters also help the company in reducing the risk of theft of electricity. The electricity automatically disconnects as soon as a household reaches its paid capacity. Thus, the company has entirely re-engineered the process of electricity generation and distribution from conventional grid based systems to a more environment friendly, cost-effective and decentralized solution.

Additionally, the company provides training to mechanics and operators employed at all the plants under the HPS network (including partner's plants) through the Husk Power University. The university was recently set up by HPS in partnership with Shell Foundation and International Finance Corporation.

Price Modelling

The main source of revenue for HPS is from the direct sales of electricity to the households. Instead of charging a post-consumption per unit price, the company charges a lump sum amount of 1.77 Euro/month/household. The amount of electricity is sufficient to light two CFL bulbs and to charge a mobile phone for seven to eight hours daily for a month.

Since people from rural areas have low incomes, there is a risk of default of payments associated with post-consumption of electricity. To overcome the risk of default, the company has developed a pricing model where each household has to pay an initial fixed amount of 1.18 Euro to acquire a power connection and to get a power cable connecting the main power line to their house. This serves as a security that the household is willing to get electricity from the company and will pay for it in future.

Social and Environmental Impact

Electricity produced by the company is environment-friendly and cheaper than the electricity provided by its counterparts, i.e., kerosene and diesel that are usually used in rural areas. The villagers have started to buy electricity from the company instead of buying kerosene and diesel. This has significantly reduced the indoor air pollution and has improved health conditions in rural areas.

Each plant of HPS serves around 400 households. It saves approximately 42,000 litres of kerosene and 18,000 litres of diesel per year.



Due to the reliable supply of electricity, HPS has promoted economic development by enabling businesses to stay open after dark and allowing children to study at night. HPS has created an ecosystem around each plant by providing income generation opportunities to local farmers and entrepreneurs. Additionally, it has created employment through its livelihood programs such as the incense stick-manufacturing program, which largely employs women. Thus, it has enabled sustainable development within the communities served by HPS.

► Challenges

There are many challenges faced by HPS. For instance, many villages are in remote areas that are having infrastructural problems. Additionally, finding skilled manpower is a big challenge as people in villages are usually not well educated and educated people from other places are not willing to work in such remote locations. In order to overcome these challenges, the company has started the Husk Power University through which it trains people to work at its plants.

One more challenge that the company is facing is the resistance from consumers. People in villages are unaware of the advantages of the renewable electricity produced by the company and are still happy with kerosene lamps and diesel generators. The company is trying to overcome this challenge by making door-to-door visits to convince people and to encourage them to use power generated by rice husk.

Footnotes 20 Husk Power Systems. (n.d.). Corporate Mission and Values. Retrieved July 3, 2012, from Husk Power Systems: <http://www.huskpowersystems.com/innerPage.php?pageT=Corporate%20Mission%20and%20Values>



3.10 Godrej ChotuKool

An Economical and Portable Cooling Solution for Rural India

Godrej has developed a small refrigerator called “ChotuKool” for people on the bottom of pyramid. It is the perfect low-cost cooling solution for small shop vendors and villagers.

► Background

Electricity is unavailable or unreliable in many rural parts of India. Families living in these parts usually have earnings under 3.68 Euro/day and cannot afford refrigeration appliances. The thought process on creating a product like ChotuKool started in 2004. While its inception already happened in 2006 at the Visionary Leaders for Manufacturing (VLFM), the project only took off when the Confederation of Indian Industry (CII) in collaboration with Japan International Cooperation Agency (JICA) got involved in the idea²¹.

The innovators G. Sunderraman and Sanjay Lonial from Godrej have spent quite some time in peoples' home to watch the way they actually use products. Based on their experience with communities and demands and expectations that people in rural areas have, Godrej created ChotuKool.

► Innovative Business Model

While developing the idea, the company involved people in rural areas in the planning process. For instance, Godrej did a pilot project with a group of consumers from the target population to assess the success of ChotuKool. The exercise helped the company a lot in identifying behavioural peculiarities of villagers. The analysis revealed that people in villages often do not use freezers, helping Godrej to realize that there is no need for a separate freezer in ChotuKool. In 2010, ChotuKool was launched as a low-cost, top loading, compact and portable refrigerator.

► Sustainable Solutions

Process Re-engineering

Godrej has re-engineered the entire process of making a conventional refrigerator to develop ChotuKool. Unlike a normal refrigerator, ChotuKool does not have a compressor and runs on a cooling chip along with a fan similar to those used in computers. Since cooling chip and fan have substituted the compressor used in a conventional refrigerator, ChotuKool weighs only 7.8 kg.

The product is portable and convenient. It also consumes less power (55 W) and runs on a dual power supply (230V AC and 12V DC) thereby taking into account the erratic electric supply. It can operate on battery, cools in the range of 5 to 15 degrees and has a cooling time of 220 minutes compared to that of 90 minutes in a conventional refrigerator, making it all the more convenient for people in rural India. ChotuKool is remarkably unique and suitable for the people at the BOP as several modifications were done with the feedback of the consumers.

Price Modelling

Generally, the price of a product plays a very important role in determining its success in the market. After assessing the needs of people in rural India, the company reduced the number of parts in ChotuKool to 20 from about 200 in the cheapest conventional refrigerator. This reduction in the number of parts reduced the price of the product drastically from about 82.37 Euro to only about 34.13 Euro (introductory), making it affordable for the people at the Bottom of the Pyramid (BOP).



Micro Distribution

The marketing and distribution of the product has been as innovative as its design and development. The company has partnered with local microfinance institutions (MFI) for ChotuKool's marketing and distribution. In Maharashtra, it has partnered with an MFI called Swayam Sikshan Prayog. The strategy is innovative and sustainable as it empowers women by giving them alternative employment and also reduces the cost of traditional marketing by the company.

Swayam Shikshan Prayog has also promoted a specialist company known as Sakhi Retail, which earns about 1.18 Euro to 1.77 Euro for each ChotuKool sold. Recently, the company has also partnered with Chennai Post to market and distribute the product. This was done in order to leverage the huge network of post offices in the country covering almost 90% of rural areas.

Godrej has assigned lucrative monetary incentives for micro-entrepreneurs mostly women from local self-help groups. The incentives depend on the number of products sold and every retailer gets about 1.77 Euro to 2.94 Euro for each ChotuKool sold. This strategy serves the twin purpose of the product, inclusiveness and sustainability. It is inclusive because the product has been made for the people at the BOP and the distribution is also being done through local communities.



About GIZ

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It is owned by the German Government and works in the field of international cooperation for sustainable development. GIZ is also engaged in international education work around the globe. It currently operates in more than 130 countries worldwide.

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Germany has been cooperating with India by providing expertise through GIZ for more than 50 years. To address India's priority of sustainable and inclusive growth, GIZ's joint efforts with the partners in India currently focus on the following areas:

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- Sustainable Urban and Industrial Development
- Natural Resource Management
- Private Sector Development
- Social Protection
- Financial Systems Development
- HIV/AIDS-Blood Safety



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